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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LE, MINH

ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/885,513	BOUTAGHOU;ZINE-EDDINE;GUI;JING
	Examiner	Art Unit
	Minh Le	2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *120* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification Objections

1. The disclosure is objected to because of the following informalities: "*leading edge portion 212* " (page 5, line 21) should be change to "*trailing edge portion 212*".

Appropriate correction is required.

2. The disclosure is objected to because of the following informalities: "*leading edge portion 210* " (page 5, lines 22-23) should be change to "*trailing edge portion 212*".

Appropriate correction is required.

Claim Objections

3. Claim 9 objected to because of the following informalities: "for supporting the slider for contact starts and *starts*" (page 11, lines 12-13) should change to "for supporting the slider for contact starts and *stops*".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2 and 4-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Polycarpou et al. (U.S. Patent Application Publication No. 2002/0012199) in view of Kobayashi et al. (U.S. Patent No. 6,424,495).

As per claim 1, Polycarpou shows in Fig. 6 a slider 90-4 comprising a slider body including a leading edge 80, a trailing edge 82 and opposed sides and the trailing edge including opposed first and second trailing edge portions, a bearing surface formed on the slider body and the second trailing edge portion including a bearing surface interface 118-7 at the predicted tipped position (See page 2, [0023]).

As per claim 2, Polycarpou shows in Fig. 4 the slider wherein the bearing surface interface 118-5 includes a textured bearing surface (See page 2, [0022]).

As per claim 5, Polycarpou shows in Fig. 4 the slider wherein the leading edge includes opposed first and second leading edge portions and the first and second leading edge portions include slider integrated pads 116-1, 116-2 dynamically balanced relative to the first and second leading edge portions (See page 2, [0022]).

As per claim 8, Polycarpou shows in Fig. 6 the slider 90-4 wherein the slider body includes inner and outer side portions 124-1, 124-2 relative to the leading and trailing edges 80, 82 and the first trailing edge portion is on the inner side portion 124-1 of the slider body and the second trailing edge portion is on the outer side portion 124-2 of the slider body with the predicted tipped 118-7 position on the outer side portion 124-2 of the slider body (See page 2, [0023]).

As per claim 9, Polycarpou shows in Fig. 6 the slider 90-4 comprising: a slider body having a bearing surface, and a means 118-7 for providing a predicted tipped interface for supporting the slider for contact starts and stops (See page 1, [0002]).

As per claim 10, Polycarpou show in Fig. 1 a disc drive 50 comprising a base chassis 52 at least one disc 54 supported for rotation relative to the base chassis, and at least one head 60

supported relative to the disc surface for read-write operations, the head including a slider 90-4 including a slider body having a leading edge 80, a trailing edge 82 and opposed first and second side portions extending along a length of the slider between the leading edge and the trailing edge and the slider body including an elevated slider integrated pad 116-1 on the first side portion (See page 2, [0023]).

As per claim 11, Polycarpou show in Fig. 1 a disc drive 50 wherein the first and second side portions are aligned with inner and outer diameters of the at least one disc to form inner and outer side portions, respectively, and the inner side portion includes the elevated slider integrated pad 116-3 (See Fig. 6) and the outer side portion includes the predicted tipped interface 117-8 (See page 2, [0023]).

As per claim 13, Polycarpou show in Fig. 1 a disc drive 50 wherein a leading edge portion of the inner side portion and a leading edge portion of the outer side portion include dynamically balanced slider integrated pads 116-3, 116-4 (See Fig. 6, page 2, [0023]).

As per claim 14, Polycarpou show in Fig. 6 the slider 90-4 comprising a raised bearing surface on the slider body and the predicted tipped interface 118-7 is formed on a portion of the raised bearing surface on the second side portion of the slider body (page 2, [0023]).

As per claim 15, Polycarpou shows in Fig. 4 the slider wherein the portion of the raised bearing surface of the predicted tipped interface is textured. (See page 2, [0022]).

As per claim 17, Polycarpou shows in Fig. 4 the slider wherein the portion of the raised bearing surface of the second side rail of the predicted tipped interface is textured (See page 2, [0022]).

As to claims 18 and 19, Polycarpou shows in Fig. 9 the slider wherein the first and second bearing rails include multiple surface tiers including U-shaped tier portions 140-3 elevated above a recessed tier portion forming damping trenches on the first and second bearing rails (See page 2, [0027]).

As to claims 1 and 9, Polycarpou does not expressly disclose a slider comprising a slider integrated pad on the first trailing edge portion elevated above the bearing surface and dynamically imbalanced relative to the second trailing edge portion to form a predicted tipped position at the second trailing edge portion.

Kobayashi discloses a slider comprising a slider integrated pad 35 on the first trailing edge portion elevated above the bearing surface and dynamically imbalanced relative to the second trailing edge portion (See Fig. 2).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider comprising a slider integrated pad on the first trailing edge portion elevated above the bearing surface and dynamically imbalanced relative to the second trailing edge portion to form a predicted tipped position at the second trailing edge portion, in order to make a slider wherein the "landing pads can reduce slider-disc surface contact area to reduce stiction", as taught by Polycarpou (See page 1, [0005]).

As per claim 4, Polycarpou does not expressly disclose a slider wherein the bearing surface includes opposed first and second side rails and the dynamically imbalanced slider integrated pad is formed on the first side rail and the bearing surface interface is formed on the second side rail.

Kobayashi discloses a slider wherein the bearing surface includes opposed first and second side rails 29, 30 and the dynamically imbalanced slider integrated pad 33 is formed on the first side rail 29 and the bearing surface interface (the surface next to the protrusion 34) is formed on the second side rail 30 (See Fig. 2).

(See Fig. 2).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider wherein the bearing surface includes opposed first and second side rails and the dynamically imbalanced slider integrated pad is formed on the first side rail and the bearing surface interface is formed on the second side rail, in order to make a slider wherein the protrusions serve to reduce the contact area between the flying head slider and the recording disk at the outflow end, so the recording disk may smoothly start rotating, as taught by Kobayashi (See col. 3, lines 33-38).

As to claims 6 and 7, Polycarpou does not expressly disclose a slider, which includes a plurality of slider-integrated pads on the first trailing edge portion and on the first and second leading edge portions.

Kobayashi discloses a slider comprising a plurality of slider integrated-pads (group of protrusions 52 in Fig. 6, col. 9, lines 4-13).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider comprising a plurality of slider-integrated pads on the first trailing edge portion and on the first and second leading edge portions, in order to make the disk drive, wherein "the flying head also reliable prevents the relatively lower protrusions to

collide against the surface of the recording disk during flight even if the protrusions are located near the outflow end", as taught by Kobayashi (See col. 3, lines 10-14).

As to claims 10 and 11, Polycarpou does not expressly disclose the disk drive wherein the slider integrated pad is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion to form the predicted tipped interface at the trailing edge portion of the outer side portion.

Kobayashi discloses the disk drive wherein (See Fig. 2) the slider 14 integrated pad 35 is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the slider integrated pad is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion to form the predicted tipped interface at the trailing edge portion of the outer side portion, in order to make a slider wherein the protrusions serve to reduce the contact area between the flying head slider and the recording disk at the outflow end, so the recording disk may smoothly start rotating, as taught by Kobayashi (See col. 3, lines 33-38).

As per claim 12, disclose Polycarpou does not expressly a slider-integrated pad is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion to form the predicted tipped interface at the trailing edge portion of the outer side portion.

Kobayashi shows in Fig. 2 a slider-integrated pad 35 is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider-integrated pad is on a trailing edge portion of the inner side portion and is dynamically imbalanced relative to a trailing edge portion of the outer side portion to form the predicted tipped interface at the trailing edge portion of the outer side portion, in order to make the disk drive, wherein "the flying head slider allows the adsorption prevention protrusion to first contact the surface of the recording disk at the outflow end", as taught by Kobayashi (See col. 2, lines 28-29).

As per claim 16, Polycarpou does not expressly the slider body includes opposed first and second bearing rails on the first and second side portions of the slider body and the dynamically imbalanced slider integrated pad is formed on the first bearing rail and the predicted tipped interface is formed on a portion of the second bearing rail.

Kobayashi shows in Fig. 2 a slider 14 a disc drive 50 wherein the slider body includes opposed first and second bearing rails on the first and second side portions of the slider body and the dynamically imbalanced slider integrated pad 35 is formed on the first bearing.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the slider body includes opposed first and second bearing rails on the first and second side portions of the slider body and the dynamically imbalanced slider integrated pad is formed on the first bearing rail and the predicted tipped interface is formed on a portion of the second bearing rail, in order to make a slider wherein the protrusions serve to

reduce the contact area between the flying head slider and the recording disk at the outflow end, so the recording disk may smoothly start rotating, as taught by Kobayashi (See col. 3, lines 33-38).

As to claims 18 and 19, Polycarpou does not expressly disclose the slider wherein the dynamically imbalanced slider integrated pad is formed of a layer deposited on the U-shaped tier portion of the first bearing rail.

Kobayashy shows in Fig. 2 the slider wherein the dynamically imbalanced slider integrated pad 35 in the first bearing rail.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the slider wherein the dynamically imbalanced slider integrated pad is formed of a layer deposited on the U-shaped tier portion of the first bearing rail, in order to make the disk drive, wherein "the flying head slider allows the adsorption prevention protrusion to first contact the surface of the recording disk at the outflow end", as taught by Kobayashi (See col. 2, lines 28-29).

As per claim 20, Polycarpou does not expressly disclose the disc drive wherein each of the first and second portions include a plurality of slider integrated pads including the dynamically imbalanced slider landing integrated pad on the first side portion.

Kobayashy discloses the disc drive wherein each of the first and second portions include a plurality of slider-integrated pads 51 (Fig. 6) including the dynamically imbalanced slider landing integrated pad on the first side portion (See col. 9, lines 4-13)

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the disc drive wherein each of the first and second portions

include a plurality of slider integrated pads including the dynamically imbalanced slider landing integrated pad on the first side portion, in order to make a slider wherein the protrusions serve to reduce the contact area between the flying head slider and the recording disk at the outflow end, so the recording disk may smoothly start rotating, as taught by Kobayashi (See col. 3, lines 33-38).

6. Claim 3, rejected under 35 U.S.C. 103(a) as being unpatentable over Polycarpou and Kobayashi as applied to claims 1 and 2 above, and further in view of Suzuki et al. (U.S. Patent No. 6,381,090).

Polycarpou and Kobayashi do not expressly disclose a slider wherein the textured bearing surface is formed of a laser texturing process.

Suzuki discloses a slider wherein the textured bearing surface is formed of a laser texturing process (See col. 6, lines 48-66).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider wherein the textured bearing surface is formed of a laser texturing process, in order to minimize the stiction between the slider and the disk to improve the CSS (contact start stop) performance, as taught by Suzuki (col. 1, lines 56-58).

Prior art cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kimmal et al. (U.S. Patent No. 5,815,346) discloses a method of texturing the slider surface of a magnetic head.

Yokohata et al. (U.S. Patent No. 6,396,661) discloses the magnetic disc drive capable of preventing stiction of magnetic head.

Liu (U.S. Patent No. 6,297,932) discloses the textured ABS slider providing much improved slider-to-media stiction and contact start stop.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Le whose telephone number is (703) 305-7867. The examiner can normally be reached on 10:00AM - 7:00PM (Mon- Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3718 for regular communications and (703) 305-3718 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

ML
January 13, 2003

HOA T. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
1/13/03